APPENDIX B

Visualization Simulation Methodology

APPENDIX B
VISUAL SIMULATION METHODOLOGY

A visual simulation is produced by combining site photography with accurate, rendered computer models to predict what would be seen if the proposed project were actually built. Currently, there are no existing CEQA or NEPA guidelines for the technical production of visual simulations, though the methodology used by Field of Vision is a typical visual simulation process and conforms to standard practices in the industry.

Creation of visual simulations to analyze the potential impacts of the proposed project can be broken into three primary steps:

- Site Reconnaissance/Photographs
- Computer Modeling
- Photo Editing

SITE RECONNAISSANCE/PHOTOGRAPHY

A site reconnaissance was conducted by Field of Vision and EDAW staff for the study area. An inventory of representative viewpoint photographs was shot by Field of Vision staff using a 45mm focal length panoramic camera from which EDAW project managers selected existing conditions images for use in visual simulations. The panoramic format doubled the horizontal field-of-view of a conventional 35mm camera body. This was done to show the broader existing context in which the proposed project will sit. This was also done in anticipation of being able to view a greater portion of the proposed project in a visual simulation without the limitations of a standard 35mm aspect ratio. To maintain consistency, all views were taken with this panoramic camera at the aforementioned 45mm focal length mounted on a tripod at a height of 5 feet. A field log documenting date, time of day, and geographic location relative to landmarks identifiable in a USGS DOQ (digital orthographic quadrangle) cross-referenced with aerial survey photographs for each viewpoint was generated. This information was subsequently integrated into a GIS spatial database in Autodesk Land Desktop and a 3D site model in 3DMax release 8, a computer modeling application.

COMPUTER MODELING

To portray the proposed project from the selected representative viewpoints, a three dimensional (3D) computer model was produced using 3DMax release 8. The model was comprised of the following components:

1. Base / Context Model
2. Proposed Prison Buildings and Facilities
3. Virtual Cameras
4. Daylighting

Base Model / Context Model

The base model is a scene of the study area measured in real-world units1. It is the virtual environment that contains all of the modeled components used to produce the visual simulations (proposed prison buildings and facilities, virtual cameras, daylighting). The base model was generated to provide accurate contextual information for the location and placement of the 3D modeled components in the life-size computer environment. The following data was used to develop the 3D base model:

[1] Use of scale within the computer modeling environment is not necessary. The computer model is life size.

1. 10m USGS Digital Elevation Model
2. 1ft. contour topographic site survey
3. Key viewpoint locations

All three components were combined into a cohesive base layer in Autodesk Land Desktop and translated to three-dimensions in 3DMax 8, a computer modeling application.

Proposed Prison Buildings and Facilities

3D models of the proposed CHS building, the Condemned Inmate Complex and facility details were built from schematic plan, cross section, and elevation drawings. The drawings of the major buildings were fully dimensioned from which the 3D computer models were built. All of these components were modeled life-size in 3DMax release 8 so that scale and dimensions are accurate. The materials and paint colors of the proposed built structures were based on reference photos of existing buildings on the site and general discussions with the project team. The modeled buildings and equipment were inserted at the appropriate location in the context model based on the conceptual site plan.

Virtual Cameras

Representative viewpoint locations were photographed with a digital camera for which the x,y,z coordinate position of the camera, focal length of the camera lens, and eye-level height of the photographer were identified. This data was integrated into the three dimensional computer model to create virtual camera viewpoints that match the positions in the life-size computer modeled environment to the lens of the original camera. This means that the 3D model of the proposed buildings and facilities in the scene accurately portrayed the proposed project in scale and distance from the representative viewpoint.

Daylighting

To accurately portray and render the 3D computer model under daylight conditions relative to each viewpoint, the date, time of day, and geographic location for each view were parametrically programmed into 3DMax release 8 to generate appropriate sun angles.

PHOTO-EDITING

Once the model was constructed and virtual cameras matched to the photographs, the rendering of the computer model from each viewpoint was composited over the existing conditions viewpoints using image editing software such as Photoshop or QFX. It was in this step that details from the computer model were blended seamlessly into the base photograph to produce the final visual simulation.